

Amendments to the Claims:

1. (Currently Amended) A method of forming a dense reinforcement-containing bulk solidifying amorphous alloy-matrix composite material comprising:

providing a feedstock of a bulk solidifying amorphous alloy having the capability of retaining an amorphous state when cooled from above its melting temperature at a critical cooling rate of no more than about 500°C/s;

dispersing and blending a plurality of pieces of a reinforcement material ~~throughout~~with the bulk solidifying amorphous alloy feedstock under vacuum to form a blended mixture of reinforcement material and bulk solidifying amorphous alloy feedstock having a packing density of at least 30% prior to densification;

heating the mixture to a densification temperature above the melting temperature of the bulk solidifying amorphous alloy and below the melting temperature of the reinforcement material;

densifying the mixture by applying a force to the mixture at ~~[[a]] the densification temperature above the melting temperature of the bulk solidifying amorphous alloy~~ for a specified densification time;

cooling the densified mixture below the glass transition temperature of the bulk solidifying amorphous alloy to form a solidified composite material;

reheating the solidified composite mixture to a forming temperature for a period of time less than the densification time, wherein said forming temperature is at least 50 °C higher than the densification temperature;

forming the reheated composite mixture into a desired shape at the forming temperature;

and quenching the reheated mixture to an ambient temperature to form an amorphous alloy-matrix composite material.

2. (Previously Presented) The method as described in claim 1 wherein the cooling of the densified mixture is carried out at a cooling rate no less than the critical cooling rate such that the bulk solidifying amorphous alloy matrix of the solidified composite material is substantially amorphous, and wherein the forming temperature is between the glass transition temperature of the bulk solidifying amorphous alloy and the crystallization temperature of the bulk solidifying amorphous alloy.

3. (Previously Presented) The method as described in claim 1 wherein the cooling of the densified mixture is carried out at a cooling rate less than the critical cooling rate such that the bulk solidifying amorphous alloy matrix of the solidified composite material is substantially crystalline, and wherein the quenching of the reheated mixture is carried out at a cooling rate no less than the critical cooling rate such that the amorphous alloy-matrix composite material is substantially amorphous.

4. (Original) The method as described in claim 1 wherein the bulk solidifying amorphous alloy has a supercooled liquid regime of larger than 60°C.

5. (Original) The method as described in claim 1 wherein the bulk solidifying amorphous alloy has a supercooled liquid regime of larger than 90°C.

6. (Original) The method as described in claim 1 wherein the bulk solidifying amorphous alloy is described by the molecular equation: $(Zr,Ti)_a(Ni,Cu,Fe)_b(Be,Al,Si,B)_c$, where a is in the range of from 30 to 75, b is in the range of from 5 to 60, and c in the range of from 0 to 50 in atomic percentages.

7. (Original) The method as described in claim 1 wherein the bulk solidifying amorphous alloy is described by the molecular equation: $(Zr,Ti)_a(Ni,Cu)_b(Be)_c$, where a is in the range of from 40 to 75, b is in the range of from 5 to 50, and c in the range of from 5 to 50 in atomic percentages.

8. (Original) The method as described in claim 1 wherein the bulk solidifying amorphous alloy is described by the molecular equation: $(Zr)_a(Nb,Ti)_b(Ni,Cu)_c(Al)_d$, where a is in the range of from 45 to 65, b is in the range of from 0 to 10, c is in the range of from 20 to 40 and d in the range of from 7.5 to 15 in atomic percentages.

9. (Original) The method as described in claim 1 wherein the bulk solidifying amorphous alloy contains a ductile crystalline phase precipitate.

10. (Original) The method as described in claim 1 wherein the reinforcement material is stable at temperatures at least greater than the melting temperature of the bulk solidifying amorphous alloy.

11. (Original) The method as described in claim 1 wherein the reinforcement material contains at least one refractory metal selected from the group consisting of tungsten, molybdenum, tantalum, niobium and their alloys.

12. (Original) The method as described in claim 1 wherein the reinforcement material contains at least one material selected from the group consisting of SiC, SiN, BC, TiC, WC, SiO₂, diamond, graphite and carbon fiber.

13. [Original] The method as described in claim 1 wherein the reinforcement material takes a form selected from the group consisting of wire, fiber, loose particulate, foam and sintered preforms.

14. [Previously Presented] The method as described in claim 1 wherein the packing density of the pre-densification mixture is at least 50%.

15. [Original] The method as described in claim 1 wherein the step of applying a force occurs under vacuum.

16. [Original] The method as described in claim 1 wherein the step of applying a force includes extruding the mixture at a temperature above the melting temperature of the bulk-solidifying amorphous alloy.

17. [Original] The method as described in claim 1 wherein the step of applying a force includes applying a hydro-static pressure to the mixture at a temperature above the melting temperature of the bulk-solidifying amorphous alloy.

18. [Original] The method as described in claim 1 wherein the step of applying a force includes carrying out a hot-isostatic process on the mixture at a temperature above the melting temperature of the bulk-solidifying amorphous alloy.

19. [Original] The method as described in claim 1 wherein the step of applying a force forms a densified mixture having a packing density of greater than 99%.

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20. (Original) The method as described in claim 1 wherein the reinforcement material comprises a volume fraction of the solidified composite material of greater than 75%.

21. - 28. (Cancelled).